

Remarks

1. Formal Matters**a. Status of the Claims**

Claims 1-65 are pending in this application. Claims 1-65 are canceled herein. Claims 66-103 are new. Upon entry of these amendments, claims 66-103 are pending and under active consideration. Applicants respectfully request entry of the amendments and remarks made herein into the file history of the present application.

b. Amendments to the Claims

New claim 66 recites a method of controlling the condition of a suspension of solid particles within a liquid including applying one or more stimuli to said suspension, said one or more stimuli adapted to control inter-particle forces between said solid particles, support for which can be found at page 3, lines 11-14 of the application as originally filed.

Claim 66 also recites that each stimulus is selectively operable to effect reversibly operable conditioning between an initial state prevailing prior to said applying one or more stimuli and a conditioned state resultant from said applying one or more stimuli, thereby to control interaction between said solid particles within said liquid, support for which can be found at page 3, lines 14-19 of the application as originally filed.

New claim 67 recites a method of controlling the consolidation of a bed of solid particles within a liquid including applying one or more stimuli to said bed, said one or more stimuli adapted to control inter-particle forces between said solid particles, support for which can be found at page 7, lines 4-7 of the application as originally filed.

Claim 67 also recites that each stimulus is selectively operable to effect reversibly operable conditioning between an initial state prevailing prior to said applying one or more stimuli and a conditioned state resultant from said applying one or more stimuli, thereby to control interaction between said solid particles within said liquid, said stimulus being applied for a predetermined time thereby to liberate at least some liquid otherwise trapped within said bed, support for which can be found at page 7, lines 7-13 as originally filed.

New claim 68 recites the method of claim 66 or claim 67, wherein the reversibly operable conditioning is facilitated by removal of the one or more stimuli, and/or by addition of another of the one or more stimuli, support for which can be found at page 3, lines 19-24 and page 7, lines 13-18 of the application as originally filed.

New claim 69 recites the method of claim 66 or claim 67, wherein the reversibly operable conditioning is facilitated substantially by way of flocculation and/or coagulation, support for which can be found at page 3, lines 25-26 and page 7, lines 24-25 of the application as originally filed.

New claim 70 recites the method of claim 66 or claim 67, wherein the inter-particle forces may be attractive or repulsive between said solid particles within the liquid, support for which can be found at page 3, lines 26-27 and page 7, lines 25-26 of the application as originally filed.

New claim 71 recites the method of claim 66 or claim 67, wherein each of the one or more stimuli is applied for a predetermined time, thereby to induce the desired attraction or repulsion and subsequently removed or altered, thereby to effect said reversibility, support for which can be found at page 3, lines 28-30 and page 7, lines 27-29 of the application as originally filed.

New claim 72 recites the method of claim 66 or claim 67, wherein the one or more stimuli comprise a change in pH, temperature, wavelength of light or the absence thereof, chemical additive, or a combination thereof, thereby to induce attractive or repulsive inter-particle forces, as desired, support for which can be found at page 3, lines 30-32 and page 5, lines 29-31 of the application as originally filed.

New claim 73 recites the method of claim 72, wherein the light includes wavelengths within the range of substantially ultraviolet to substantially visible, support for which can be found at page 4, lines 6-7 and page 8, lines 4-5 of the application as originally filed.

New claim 74 recites the method of claim 72, wherein the light stimulus is applied in combination with variations in pH and/or temperature, support for which can be found at page 4, lines 7-8 and page 8, lines 5-6 of the application as originally filed.

New claim 75 recites the method of claim 72, wherein the chemical additive is a single chemical capable of acting as flocculant or dispersant depending on the selection of predetermined process parameters, support for which can be found at page 4, lines 10-12 and page 8, lines 8-10 of the application as originally filed.

New claim 76 recites the method of claim 72, wherein the chemical additive is in the form of a photosensitive flocculant, support for which can be found at page 4, lines 12-13 and page 8, lines 10-11 of the application as originally filed.

New claim 77 recites the method of claim 72, wherein the chemical additive is a stimulus-sensitive polymer, support for which can be found at page 4, line 14 and page 8, line 13 of the application as originally filed.

New claim 78 recites the method of claim 77, wherein the stimulus-sensitive polymer is a polyelectrolyte, support for which can be found at page 4, line 15 and page 8, line 14 of the application as originally filed.

New claim 79 recites the method of claim 78, wherein the polyelectrolyte maybe cationic, anionic, non-ionic, or a combination thereof, support for which can be found at page 4, lines 15-16 and page 8, lines 14-15 of the application as originally filed.

New claim 80 recites the method of claim 78, wherein the polyelectrolyte is adsorbable onto the surface of said solid particles in a sufficient quantity as to create steric or electrostatic repulsion between said particles, support for which can be found at page 4, lines 16-19 and page 8, lines 15-18 of the application as originally filed.

New claim 81 recites the method of claim 78, wherein the polyelectrolyte is substantially soluble at pH values where it is substantially charged, thereby to effect dispersion of said suspension and/or wherein said polyelectrolyte is substantially insoluble at pH values where it is substantially uncharged, thereby to effect flocculation of said suspension, support for which can be found at page 4, lines 19-23 and page 8, lines 18-22 of the application as originally filed.

New claim 82 recites the method of claim 78, wherein the polyelectrolyte is selected from the group consisting of: chitosan, polyacrylic acid, polyacrylamides and derivatives thereof, polymethacrylic acid, poly sodium acrylate, polystyrene sulfanate, polysulfanamide, poly(2-vinyl pyridine), poly(vinylpyridinium bromide), poly(diallyldimethylammonium chloride)(DADMAC), poly(diethylamine), poly(epichlorohydrin), polymers of quarternised dimethylaminoethyl acrylates, polymers of quarternised dimethylaminoethyl acrylamides, poly(ethyleneimine), polyglucose amine, and homo- and copolymers prepared from ethylenic unsaturated monomers including methacrylic acid and salts thereof, methacrylamide, acrylamido methyl propyl sulfonic acid (AMPS), and/or styrene sulfanate and salts thereof, support for which can be found at page 4, line 24 through page 5, line 1 and page 8, lines 22-33 of the application as originally filed.

New claim 83 recites the method of claim 78, wherein the polyelectrolyte is chitosan or polyacrylic acid, support for which can be found at page 5, lines 1-2 and page 8, lines 33-34 of the application as originally filed.

New claim 84 recites the method of claim 78, wherein the polyelectrolyte is a polysaccharide, support for which can be found at page 5, line 3 and page 9, line 1 of the application as originally filed.

New claim 85 recites the method of claim 84, wherein the polysaccharide is selected from the group consisting of: xanthan, carragenan, agarose, agar, pectin, guar gum, starches, and alginic acid, or the polysaccharide is a derivatised polysaccharide selected from the group consisting of: carboxy methyl cellulose and hydroxy propyl guar, support for which can be found at page 5, lines 3-7 and page 9, lines 1-5 of the application as originally filed.

New claim 86 recites the method of claim 77, wherein the polymer is temperature-sensitive, support for which can be found at page 5, line 8 and page 9, line 6 of the application as originally filed.

New claim 87 recites the method of claim 86, wherein the temperature sensitivity is such that the polymer is substantially soluble or substantially insoluble at substantially low temperatures and/or the polymer is substantially insoluble (thereby to gel) or substantially soluble, at substantially high temperatures, support for which can be found at page 5, lines 8-12 and page 9, lines 6-10 of the application as originally filed.

New claim 88 recites the method of claim 86, wherein the temperature sensitive polymer is selected from the group consisting of: poly(N-isopropylacrylamide) (poly(NIPAM)), co-polymers of poly(NIPAM) with other polymers such as polyacrylic acid, poly(dimethylaminopropylacryl-amide) or poly(diallyldimethylammonium chloride) (DADMAC), polyethylene oxide, poly propylene oxide, methylcellulose, ethyl hydroxyethyl cellulose, carboxymethyl cellulose, hydrophobically modified ethyl hydroxyethyl cellulose, poly dimethylacrylamide/N-4-phenylazophenyl-acrylamide (DMAAm) and poly dimethylacrylamide/4-phenylazophenyl-acrylate (DMAA) and other related polymers, gelatine, agarose, amylase, agar, pectin, carragenan, xanthan gum, guar gum, locust bean gum, hyaluronate, dextran, starches, and alginic acid, support for which can be found at page 5, lines 13-23 and page 9, lines 11-21.

New claim 89 recites the method of claim 86, wherein the temperature sensitive polymer is methylcellulose or poly(NIPAM), support for which can be found at page 5, lines 23-24 and page 9, lines 21-22 of the application as originally filed.

New claim 90 recites the method of claim 72, wherein the chemical additive is a photosensitive molecule, incorporated within one or more polymers, at least one which is a water-soluble polymer, support for which can be found at page 5, lines 25-28 and page 9, lines 23-26 of the application as originally filed.

New claim 91 recites the method of claim 90, wherein the polymers suitable for the inclusion of photosensitive units include polypeptides comprising lysine and glutamic acid, support for which can be found at page 5, lines 28-31 and page 9, lines 26-29 of the application as originally filed.

New claim 92 recites the method of claim 90, wherein the polymer is selected from the group consisting of: polyacrylamides, polysaccharides, polyelectrolytes and other water-soluble molecules, support for which can be found at page 5, lines 31-32 and page 9, lines 29-30 of the application as originally filed.

New claim 93 recites the method of claim 90, wherein the photosensitive units are spyropyrans, spyrooxazines, azo benzene and similar groups, triphenyl methane derivatives and/or similar groups, support for which can be found at page 6, lines 1-6, page 9, line 31, and page 10, line 3 of the application as originally filed.

New claim 94 recites the method of claim 93, wherein the spyropyrans and/or spyrooxazines are selected from the group consisting of: benzoindolino pyranospiran (BIPS), benzoindolino spyrooxazine (BISO), naphthalenoindolino spyrooxazine (NISO) and quinolinyndolino spyrooxazine (QISO), support for which can be found at page 6, lines 2-5, page 9, line 31, and page 10, line 3 of the application as originally filed.

New claim 95 recites the method of claim 90, wherein the polymers responsive to the change in wavelength are selected from the group consisting of: poly dimethylacrylamide/N-4-phenylazophenylacrylamide (DMAAm), poly dimethylacrylamide/ 4-phenylazophenylacrylate (DMAA) and similar polymers, support for which can be found at page 6, lines 9-14 and page 10, lines 6-10 of the application as originally filed.

New claim 96 recites the method of claim 72, wherein the chemical additive is one or more copolymers added to said suspension, support for which can be found at page 6, lines 13-14 and page 10, lines 9-10 of the application as originally filed.

New claim 97 recites the method of claim 96, wherein component monomers within the copolymer may be dispersed randomly, alternately or in AB blocks, ABA blocks, ABC blocks, comb, ladder, and/or star copolymers, support for which can be found at page 6, lines 14-17 and page 10, lines 9-14 of the application as originally filed.

New claim 98 recites the method of claim 97, wherein the block copolymer includes sectors that variously adsorb to said surface of said particles in suspension, and/or are sensitive to a stimulus, support for which can be found at page 6, lines 17-19 and page 10, lines 14-16 of the application as originally filed.

New claim 99 recites the method of claim 98, wherein the copolymers are selected from the group consisting of polyethyleneoxide-polypropyleneoxide-polyethyleneoxide (PEO/PPO/PEO) triblock copolymers, support for which can be found at page 6, lines 21-23 and page 10, lines 18-20 of the application as originally filed.

New claim 100 recites the method of claim 99, wherein the PEO/PPO/PEO triblock copolymer is a Pluronic polymer, support for which can be found at page 6, lines 23-24 and page 10, lines 20-21 of the application as originally filed.

New claim 101 recites the method of claim 96, wherein the copolymer includes one or more polypropylene oxide sectors, thereby to adsorb particularly to hydrophobic particles, and one or more polyethylene oxide sectors thereby to provide inter-particle steric repulsion at substantially room temperature, support for which can be found at page 6, lines 24-26 and page 10, lines 21-24 of the application as originally filed.

New claim 102 recites the method of claim 96, wherein the copolymer(s) are comb copolymer(s), thereby having a polyacrylic acid backbone that enhances said surface adsorption, and polyethylene oxide teeth that are stimulus-sensitive, support for which can be found at page 6, lines 28-31 and page 10, lines 25-28 of the application as originally filed.

New claim 103 recites a method of separating solid particles from a liquid including applying the method according to claim 66 or claim 67, for a predetermined time thereby to provide a solids-rich phase and a liquids-rich phase and then separating said two phases, support

for which can be found at page 10, line 32 through page 11, line 2 of the application as originally filed.

2. Conclusion

Applicant respectfully submits that the instant application is in good and proper order for allowance and early notification to this effect is solicited. If, in the opinion of the Examiner, a telephone conference would expedite prosecution of the instant application, the Examiner is encouraged to call the undersigned at the number listed below.

Respectfully submitted,

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